

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mindy Rittner on 4/8/2011.

The application has been amended as follows:

1-10. (Canceled)

11. (currently amended) A detection apparatus to detect weak magnetic fields comprising:

a first magneto-optical element that exhibits a response, in the form of Faraday rotation, to an applied magnetic field, a hysteresis characteristic of the Faraday rotation exhibiting transition regions between a plurality of stable states;

a light source to emit light that impinges on the first magneto-optical element;

a modulation element comprising a coil adjacent to the first magneto-optical element, the modulation element being a source of a time-varying magnetic field of sufficient strength to switch the first magneto-optical element between the stable states; and

a detector configured to detect a change in the light caused by a reaction of the first magneto-optical element to a weak magnetic field of an organ or bodily system, the change occurring when the first magneto-optical element is in one of the transition regions,

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wherein the detection apparatus has a sensitivity sufficient to detect the weak magnetic field.

12. (canceled)

23. (canceled)

29. (currently amended) The detection apparatus of claim 11, wherein the ~~weak magnetic field is provided by an~~ organ or bodily system is of an animal.

30. (currently amended) The detection apparatus of claim 11, wherein the ~~weak magnetic field is provided by an~~ organ or bodily system is of a human.

31-33. (canceled)

40. (currently amended) A method of detecting weak magnetic fields comprising:  
providing a first magneto-optical element exhibiting a response, in the form of Faraday rotation, to an applied magnetic field, a hysteresis characteristic of the Faraday rotation exhibiting transition regions between stable states, wherein the first magneto-optical element is in the presence of a weak magnetic field;

impinging light from a light source on the first magneto-optical element;

applying a time-varying magnetic field from a modulation element to the first magneto-optical element;

switching the first magneto-optical element between the stable states; and

detecting a change in the light caused by a reaction of the first magneto-optical element to the weak magnetic field of an organ or bodily system, the change occurring when the first magneto-optical element is in one of the transition regions.

51. (canceled)

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62. (canceled)

55. (currently amended) The detection method of claim 40, wherein the ~~an~~-organ or bodily system is of an animal ~~provides the weak magnetic field~~.

56. (currently amended) The detection method of claim 40, wherein the ~~an~~-organ or bodily system is of a human ~~provides the weak magnetic field~~.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NASIR SHAHRESTANI whose telephone number is (571) 270-1031. The examiner can normally be reached on Mondays and Tuesdays (8:30 am - 5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

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